HW 5 Trig Values for Any Angle Name Key

I will be able to find trigonometric values for angles over 90-degrees.

Find the number of rotations or fraction of a rotation represented by each angle below.

1.) 45° $\frac{1}{8}$

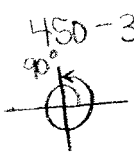
$\frac{45}{360}$

2.) 90° $\frac{1}{4}$

$\frac{90}{360}$

3.) 450°

$450 - 360 = 90°$



$1\frac{1}{4}$

4.) -640°

640
-360
-280

$1\frac{7}{9}$

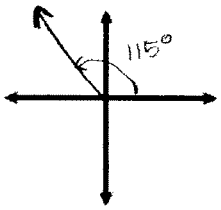
1 rot.

$\frac{280}{360}$

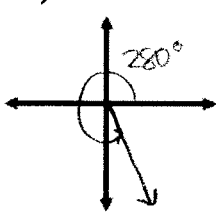
$\frac{7}{9}$

Sketch each angle in standard position.

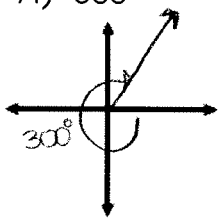
5.) 115°



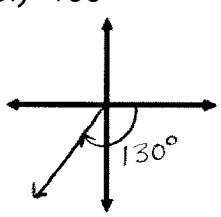
6.) 280°



7.) -300°

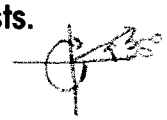


8.) -130°



For each angle, find the coterminal angle between $-360 < \theta < 360$. Then find the reference angle, if it exists.

9.) 35°



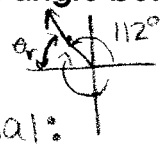
coterminal:

$360 - 35 = 325$

$\boxed{-325°}$

no reference angle

10.) 112°



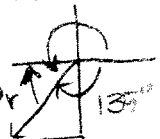
coterminal:

$360 - 112 = 248$

$\boxed{-248°}$

reference: $180° - 112° = \boxed{68°}$

12.) -135°



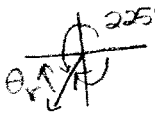
coterminal:

$360 - 135 = \boxed{225°}$

reference: $180 - 135 = 4$

$\boxed{45°}$

13.) 225°



coterminal:

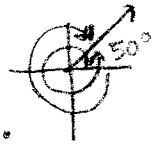
$360 - 225 = 135°$

$\boxed{-135°}$

reference: $180 - 135 =$

$\boxed{45°}$

14.) 410°



coterminal:

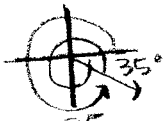
$410 - 360 = 50$

$\boxed{50° \text{ and } -310°}$

$360 - 50 = 310$

reference: $\boxed{50°}$

15.) -395°



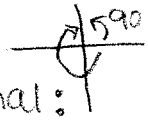
$-395 + 360 = -35$

coterminal: $\boxed{-35°}$

$360 - 35 = \boxed{325°}$

reference: $\boxed{35°}$

16.) 90°



coterminal:

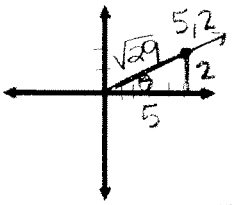
$360 - 90 = 270$

$\boxed{-270°}$

reference: none

Find the exact values of the six trigonometric functions of θ given the point on the terminal side of the angle.

17.) (5, 2)



$r = \sqrt{(x^2) + (y^2)}$

$r = \sqrt{5^2 + 2^2}$

$r = \sqrt{25 + 4}$

$r = \sqrt{29}$

$\sin\theta = \frac{2}{\sqrt{29}} = \boxed{\frac{2\sqrt{29}}{29}}$ $\cos\theta = \frac{5}{\sqrt{29}} = \boxed{\frac{5\sqrt{29}}{29}}$ $\tan\theta = \boxed{\frac{2}{5}}$

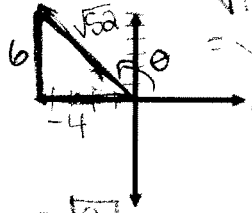
$\csc\theta = \boxed{\frac{\sqrt{29}}{2}}$ $\sec\theta = \boxed{\frac{\sqrt{29}}{5}}$ $\cot\theta = \boxed{\frac{5}{2}}$

18.) (-4, 6)

$r = \sqrt{(-4)^2 + (6)^2}$

$r = \sqrt{16 + 36}$

$= \sqrt{52}$



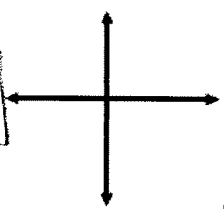
$\sin\theta = \frac{6}{\sqrt{52}}$ $\csc\theta = \boxed{\frac{\sqrt{52}}{6}}$

$\frac{6\sqrt{52}}{52} = \boxed{\frac{3\sqrt{52}}{26}}$

$\cos\theta = \frac{-4}{\sqrt{52}}$ $\sec\theta = \boxed{\frac{\sqrt{52}}{-4}}$

$\frac{-4\sqrt{52}}{52} = \boxed{-\frac{\sqrt{52}}{13}}$

19.) (-1, -8)



$\tan\theta = \frac{6}{-4}$

$\boxed{\frac{3}{-2}}$

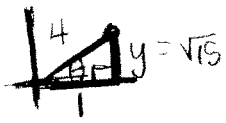
$\cot\theta = \frac{-4}{6}$

Given the quadrant of θ in standard position and a trigonometric function value, find the exact value for the indicated function.

20.) I, $\cos\theta = 0.25$; $\tan\theta$

tan θ positive 1/4

$\tan\theta = \frac{\sqrt{15}}{1}$



$4^2 - 1^2 = y^2$

$16 - 1 = y^2$

$15 = y^2$

$y = \sqrt{15}$

21.) III, $\cos\theta = -0.5$; $\tan\theta$

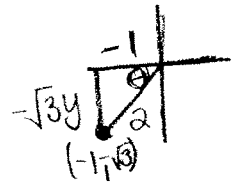
$-\frac{1}{2}$

$2^2 - 1^2 = y^2$

$4 - 1 = y^2$

$3 = y^2$

$\sqrt{3} = y$



$\tan\theta = \frac{\sqrt{3}}{-1} = \frac{\sqrt{3}}{1}$

22.) II, $\sin\theta = 0.4$; $\sec\theta$

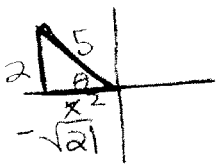
$\frac{2}{5}$ $\frac{\text{opp}}{\text{hyp}}$

$5^2 - 2^2 = x^2$

$25 - 4 = x^2$

$21 = x^2$

$\sqrt{21} = x$



$\cos\theta = \frac{-\sqrt{21}}{5}$ $\sec\theta = \frac{5}{-\sqrt{21}} = \frac{5\sqrt{21}}{21}$

y x $\frac{y}{x}$

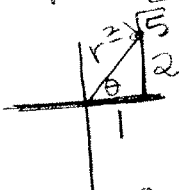
23.) I, $\tan\theta = \frac{2}{1}$; $\csc\theta$ $\sin\theta$

$1^2 + 2^2 = r^2$

$1 + 4 = r^2$

$5 = r^2$

$\sqrt{5} = r$



$\sin\theta = \frac{2}{\sqrt{5}}$ $\csc\theta = \frac{\sqrt{5}}{2}$

Find the exact values for sine, cosine, and tangent for each angle.

360 − 210 = 150° use

24.) 300°

$\sin(300) = -\frac{\sqrt{3}}{2}$

$\cos(300) = \frac{1}{2}$

$\tan(300) = \frac{-\sqrt{3}}{1}$

25.) 240°

$\sin(240) = -\frac{\sqrt{3}}{2}$

$\cos(240) = -\frac{1}{2}$

$\tan(240) = \frac{-\sqrt{3}}{-1}$ or $\sqrt{3}$

26.) -210°

$\sin(-210) = \frac{1}{2}$

$\cos(-210) = -\frac{\sqrt{3}}{2}$

$\tan(-210) = \frac{1}{-\sqrt{3}}$ or $-\frac{\sqrt{3}}{3}$

Find each value. Give exact answers.

27.) $\sin 135° = \frac{\sqrt{2}}{2}$ (y)

28.) $\tan 150° \quad \frac{1}{2} \div \frac{-\sqrt{3}}{2} = \frac{1}{-\sqrt{3}} = \frac{-\sqrt{3}}{3}$ ($\frac{y}{x}$)

29.) $\cos 210° = \frac{-\sqrt{3}}{2}$ (x)

30.) $\sin 90° = 1$ (y)

31.) $\sin 495°$ $495 - 360 = 135$

$\sin(135°) = \frac{\sqrt{2}}{2}$ (y)

32.) $\cos 0° = 1$ (x)

33.) $\cot 150° = \frac{-\sqrt{3}}{2} \div \frac{1}{2} = \frac{-\sqrt{3}}{1}$ ($\frac{x}{y}$)

34.) $\cos(-135°)$ $360 - 135 = 225$

$\cos(225) = \frac{-\sqrt{2}}{2}$ (x)

35.) $\sin 720°$ $720 - 360 = 360$

$\sin(360) = 0$ (y)